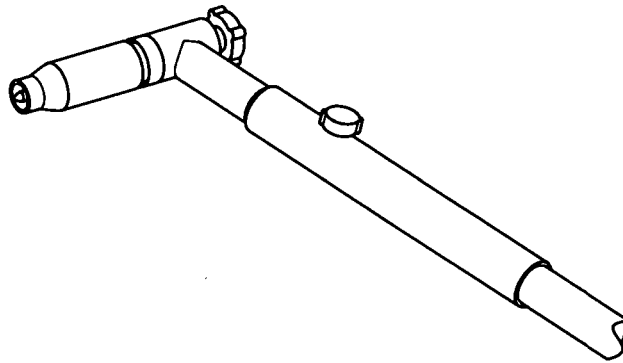




FILE COPY
RETURN TO FOLDER

**MODEL**

MTT-1512HR
MTT-1525HR
MTT-1512NR
MTT-1525NR
MTT-1512VHR
MTT-1525VHR
MTT-1512VNR
MTT-1525VNR
MTT-1512HF
MTT-1525HF
MTT-1512NF
MTT-1525NF
MTT-1512VHF
MTT-1525VHF
MTT-1512VNF
MTT-1525VNF

OWNER'S MANUAL

IMPORTANT: Read and understand the entire contents of both this manual and the power source manual used with this unit, with special emphasis on the safety material throughout both manuals, before installing, operating, or maintaining this equipment. This unit and these instructions are for use only by persons trained and experienced in the safe operation of welding equipment. Do not allow untrained persons to install, operate, or maintain this unit. Contact your distributor if you do not fully understand these instructions.

Miller Electric Mfg. Co.
A Miller Group Ltd. Company

P.O. Box 1079
Appleton, WI 54912 USA
Tel. 414-734-9821

LIMITED WARRANTY

EFFECTIVE: FEBRUARY 16, 1988

This warranty supersedes all previous MILLER warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY - Subject to the terms and conditions hereof, Miller Electric Mfg. Co., Appleton, Wisconsin warrants to its Distributor/Dealer that all new and unused Equipment furnished by Miller is free from defect in workmanship and material as of the time and place of delivery by Miller. No warranty is made by Miller with respect to engines, trade accessories or other items manufactured by others. Such engines, trade accessories and other items are sold subject to the warranties of their respective manufacturers, if any. All engines are warranted by their manufacturer for one year from date of original purchase, except Tecumseh engines which have a two year warranty.

Except as specified below, Miller's warranty does not apply to components having normal useful life of less than one (1) year, such as spot welder tips, relay and contactor points, MILLERMATIC parts that come in contact with the welding wire including nozzles and nozzle insulators where failure does not result from defect in workmanship or material.

Miller shall be required to honor warranty claims on warranted Equipment in the event of failure resulting from a defect within the following periods from the date of delivery of Equipment to the original user:

1. Arc welders, power sources, robots, and components . . . 1 year
2. Load banks 1 year
3. Original main power rectifiers 3 years
(labor - 1 year only)
4. All welding guns, feeder/guns and torches 90 days
5. All other Millermatic Feeders 1 year
6. Replacement or repair parts, exclusive of labor . . . 60 days
7. Batteries 6 months

provided that Miller is notified in writing within thirty (30) days of the date of such failure.

As a matter of general policy only, Miller may honor claims submitted by the original user within the foregoing periods.

In the case of Miller's breach of warranty or any other duty with respect to the quality of any goods, the exclusive remedies therefore shall be, at Miller's option (1) repair or (2) replacement or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at Customer's risk and expense. MILLER's option of repair or replacement will be F.O.B., Factory, at Appleton, Wisconsin, or F.O.B., at a MILLER authorized service facility, therefore, no compensation for transportation costs of any kind will be allowed. Upon receipt of notice of apparent defect or failure, Miller shall instruct the claimant on the warranty claim procedures to be followed.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

EXCEPT AS EXPRESSLY PROVIDED BY MILLER IN WRITING, MILLER PRODUCTS ARE INTENDED FOR ULTIMATE PURCHASE BY COMMERCIAL/INDUSTRIAL USERS AND FOR OPERATION BY PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT AND NOT FOR CONSUMERS OR CONSUMER USE. MILLER'S WARRANTIES DO NOT EXTEND TO, AND NO RESELLER IS AUTHORIZED TO EXTEND MILLER'S WARRANTIES TO, ANY CONSUMER.

SECTION 1 - SAFETY RULES

WARNING: UNSAFE PROCEDURES OR PRACTICES can cause serious personal injury or death.

- *Read, understand, and follow ALL of these safety rules before installing, operating, or servicing this equipment.*
- *Be sure that all end users of this equipment, the operator and helpers, read and understand these safety rules.*

1 - 1. PREVENT ELECTRIC SHOCK

Touching live electrical parts can cause severe burns to the body or fatal shock. Severity of electrical shock is determined by the path and amount of current through the body. Therefore:

- Do not touch live electrical parts.
- Do not work in wet or damp areas.
- Wear dry insulating gloves and body protection.
- Disconnect all power before installing or servicing this equipment.
- Turn off all equipment when not in use.
- Properly install and ground the welding power source according to its Owner's Manual and all applicable codes.
- Do not use worn or damaged cables or cables that are too small or poorly spliced.
- Do not wrap cables around your body.
- Do not touch electrode and any grounded object or circuit at the same time.
- Use only well-maintained equipment. Repair or replace damaged parts at once.

1 - 2. PROVIDE PROTECTION FROM FUMES AND GASES

Breathing welding fumes and gases can be hazardous to your health.

- Keep your head out of the fumes.
- Use adequate ventilation in the work area to keep fumes and gases from your breathing zone and the general work area.
- If ventilation is inadequate, use an approved breathing device.
- Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for any materials used.

1 - 3. PROTECT EYES AND SKIN FROM ARC RAYS; PROTECT EARS FROM NOISE

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

- Wear a welding helmet fitted with a proper filter lens (see ANSI Z49.1 for detailed information).
- Use protective screens or barriers to protect others from flash and glare.
- Wear protective clothing and foot protection.
- Always wear safety glasses or safety goggles in a work area.

1 - 4. PREVENT FIRES AND BURNS

The hot workpiece, hot equipment, other hot metal, spatter, and arc sparks can cause fires and burns.

- Wear correct eye, face, and body protection in the work area.
- Allow work and equipment to cool before handling.
- Do not weld near combustible material.
- Watch for fire, and keep a fire extinguisher nearby.
- For additional information, refer to NFPA Standard 51B, "Fire Prevention in Use of Cutting and Welding Processes," available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

1 - 5. PROTECT COMPRESSED GAS CYLINDERS

Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
- Install and secure cylinders so that they cannot fall or tip over by fastening them to a mounting bracket, wall, or other stationary support.
- Keep cylinders away from any welding or other electrical circuits.
- Never allow a welding electrode to touch any cylinder.

1 - 6. PROVIDE PROTECTION FOR SPECIAL SITUATIONS

- a. Do not weld or cut containers or materials which have held or been in contact with hazardous substances unless they are properly cleaned and inspected.
- b. Do not weld or cut painted or plated parts unless special ventilation is provided to remove highly toxic fumes or gases.
- c. Since welding can affect pacemakers, keep all pacemaker wearers out of the work area. Have them consult a doctor before coming near a welding operation.

1 - 7. PROVIDE PROPER EQUIPMENT MAINTENANCE

Improperly maintained equipment can result in poor work, but most importantly it can cause physical injury or death through fires or electrical shock. Therefore:

- a. Always have qualified personnel perform the installation, troubleshooting, and maintenance work. Do not perform any electrical work unless you are fully qualified.
- b. Before performing any maintenance work inside a power supply, disconnect the power supply from the electrical power source.
- c. Maintain cables, grounding wire, connections, power cord, and power supply in safe working order. Do not operate any equipment in questionable condition.
- d. Do not abuse any equipment or accessories. Keep equipment away from heat sources such as furnaces, wet conditions such as water puddles, oil or grease, corrosive atmospheres, and inclement weather.
- e. Keep all safety devices, guards, panels, and covers in position and in good repair.
- f. Use equipment for its intended purpose. Do not modify it in any manner.

1 - 8. ADDITIONAL SAFETY INFORMATION

For more information on safe practices for setting up and operating electric welding and cutting equipment and on good working habits, ask your welding equipment supplier. The following publications, which are available from the American Welding Society, 550 N.W. LeJuene Rd., Miami, FL 33126, are recommended to you:

- a. "Safety in Welding and Cutting" - AWS Z49.1 (ANSI)
- b. "Recommended Safe Practices for Gas-Shielded Arc Welding" - AWS A6.1
- c. "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances" - AWS F4.1
- d. NFPA Standard 51B, "Fire Prevention in Use of Cutting and Welding Processes," available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.
- e. NFPA Standard 70, "National Electrical Code," available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.
- f. ANSI Standard Z87.1, "Safe Practice for Occupation and Educational Eye and Face Protection," available from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
- g. OSHA Standard 29 CFR, Part 1910, Subpart Q, "Welding, Cutting, and Brazing," available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
- h. CSA Standard W117.2, "Code for Safety in Welding and Cutting," available from the Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario, Canada M9W 1R3.
- i. See also the Standards Booklet Index in the welding power source Owner's Manual.

SECTION 1 - INTRODUCTION

| Model | Ampere Rating at 100% Duty Cycle DCEN: ACHF | Tungsten Size Capacity | Cable Length | Torch Body | Cooling Method | Weight | |
|--|--|--|---------------------|--|-------------------|----------------------|----------------------|
| | | | | | | Net | Ship |
| MTT-1512HR MTT-1512HF MTT-1512VHF MTT-1512VHR | 150 Amperes With Argon* | .020 thru 1/8 in. (0.5 thru 3.2 mm) | 12.5 ft. (3.8 m) | Length: 8.0 in. (203.0 mm) Handle Diameter: 0.9 in. (22.9 mm) Weight: 4.5 oz. (127.6 g) | Air | 2.5 lbs. (1.1 kg) | 3.0 lbs. (1.4 kg) |
| MTT-1512NR MTT-1512NF MTT-1512VNR MTT-1512VNF | | | | | | 3.0 lbs. (1.4 kg) | 3.5 lbs. (1.6 kg) |
| MTT-1525HR MTT-1525HF MTT-1525VHR MTT-1525VHF | | | 25 ft. (7.6 m) | | | 4.5 lbs. (2.0 kg) | 5.0 lbs. (2.3 kg) |
| MTT-1525NR MTT-1525NF MTT-1525VNR MTT-1525VNF | | | | | | 5.5 lbs. (2.5 kg) | 6.0 lbs. (2.7 kg) |

*Rated with Gas Lens Collet Body

Figure 2 - 1. Specifications

2 - 1. DUTY CYCLE - The duty cycle of a welding torch is the percentage of a ten minute period that a torch can be operated at a given load. This torch is rated at 100% duty cycle using argon shielding gas. This means that the torch can be operated at rated load conditions continuously.

CAUTION: EXCEEDING THE RATED AMPERAGE and duty cycle can result in damage to the torch.

- Do not exceed rated amperage and duty cycle stated in Figure 2-1.

2 - 2. GENERAL INFORMATION AND SAFETY

A. General

Information presented in this manual and on various labels, tags, and plates on the unit pertains to equipment design, installation, operation, maintenance, and troubleshooting which should be read, understood, and followed for the safe and effective use of this equipment.

B. Safety

The installation, operation, maintenance, and troubleshooting of arc welding equipment requires practices and procedures which ensure personal safety and the safety of others. Therefore, this equipment is to be installed, operated, and maintained only by qualified persons in accordance with this manual and all applicable codes such as, but not limited to, those listed at the end of Section 1 - Safety Rules.

Safety instructions specifically pertaining to this unit appear throughout this manual highlighted by the signal words **WARNING** and **CAUTION** which identify different levels of hazard.

WARNING statements include installation, operation, and maintenance procedures or practices which if not carefully followed could result in serious personal injury or loss of life.

CAUTION statements include installation, operation, and maintenance procedures or practices which if not carefully followed could result in minor personal injury or damage to this equipment.

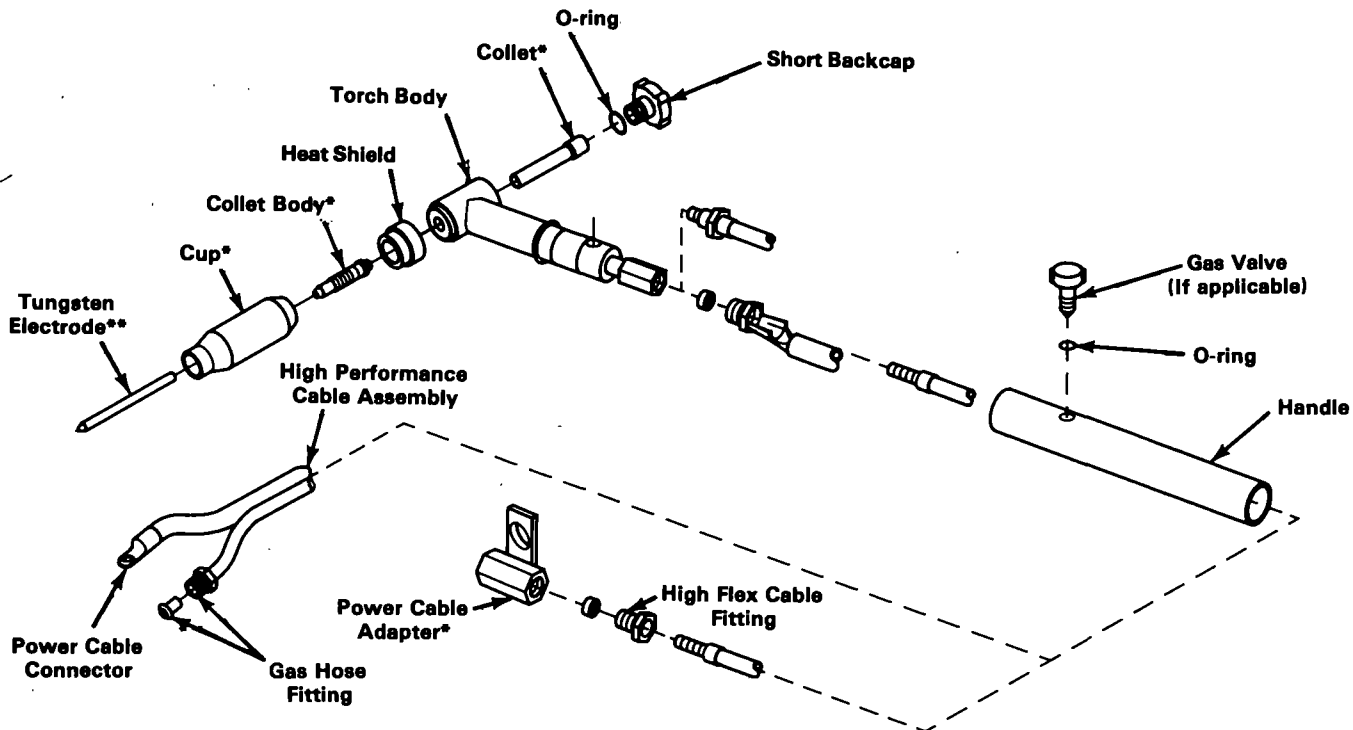
A third signal word, **IMPORTANT**, highlights instructions which need special emphasis to obtain the most efficient operation of this equipment.

2 - 3. RECEIVING HANDLING - Before installing this equipment, clean all packing material from around the unit, and carefully inspect for any damage that may have occurred during shipment. Any claims for loss or damage that may have occurred in transit must be filed by the purchaser with the carrier. A copy of the bill of lading will be furnished by the manufacturer on request if occasion to file claim arises.

When requesting information concerning this equipment, it is essential that Model Description and Style Numbers of the equipment be supplied. The style number is located on a label under the torch handle.

2 - 4. DESCRIPTION - This torch is specifically for use with the Gas Tungsten Arc Welding (GTAW) process. The alphanumeric model designation refers to the following:

M - Miller
T - TIG/GTAW
T - Torch
15 - Ampere Rating: 150 Amperes
12 - 12.5 ft. (3.8 m) Cable
25 - 25 ft. (7.6 m) Cable
H - High Flex Cable (1 piece assembly)
N - High Performance Cable (2 piece assembly)
R - Rigid Head
F - Flexible Head
V - Gas Valve



*Required Consumables and Accessories
 **Obtain from Welding Equipment Supplier

TA-120 673

Figure 3 - 1. Torch Components

WARNING: ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Shut down welding power source and disconnect input power employing "lockout/tagging procedures" before installing torch.

Lockout/tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device.

3 - 1. TORCH BODY (Figure 3-1) - The torch body is shipped requiring consumables and accessories indicated in Figure 3-1: cup, collet body, collet, power cable adapter (with High Flex Cable only), and tungsten electrode.

Assemble torch body as follows:

1. Install collet body into torch body making sure heat shield is in place.
2. Install cup onto collet body.
3. Install standard collet, slotted end first, through back of torch body into collet body. If using reverse collet, install collet with slotted end toward backcap.
4. Install backcap and O-ring (supplied on backcap) onto torch body.
5. Install properly prepared tungsten electrode (see Section 5-4) through front of collet body to position electrode tip outside cup rim. Securely tighten backcap.

To readjust electrode, loosen backcap.

IMPORTANT: As a general rule, electrode extension should equal electrode diameter; exact electrode extension may vary according to application.

3 - 2. GAS HOSE CONNECTIONS AND GAS VALVE (If applicable)

IMPORTANT: If power source is not equipped with a gas valve, a torch gas valve is required. To install gas hose, connect gas hose fitting to regulator/flowmeter. An extra hose may be required to make connection.

A. High Flex Cable Assembly

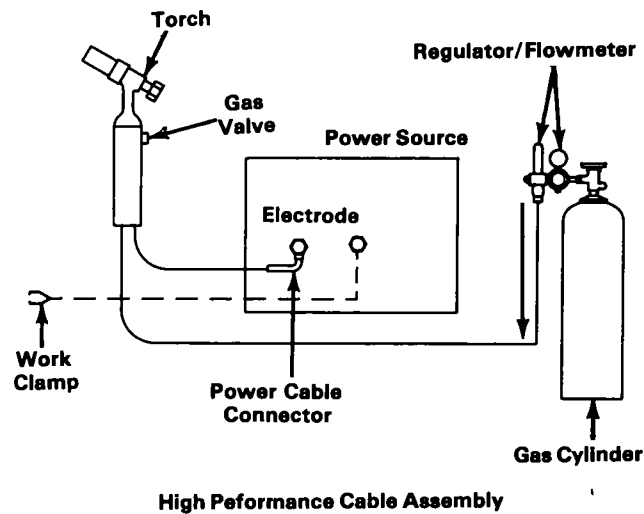
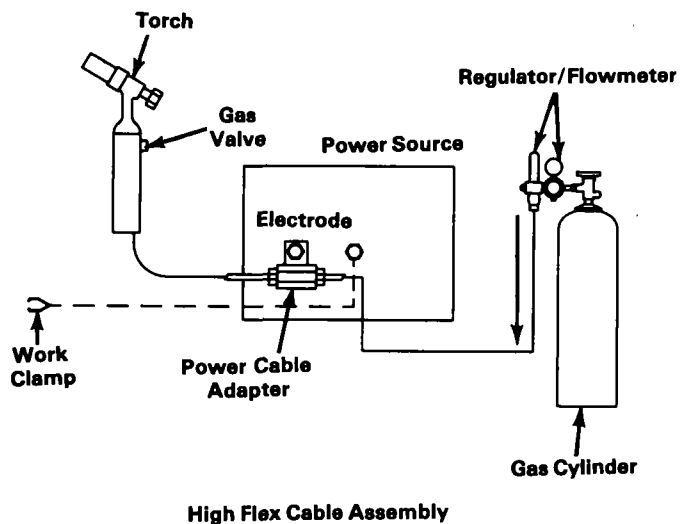
The high flex cable contains the power cable within the gas hose. The high flex cable has a 3/8-24 male right-hand fitting (Figure 3-1).

To install high flex cable, connect high flex cable fitting to power cable adapter. Connect a suitable length of gas hose from power cable adapter to gas valve outlet or regulator/flowmeter (Figures 3-2 and 3-3).

B. High Performance Cable Assembly

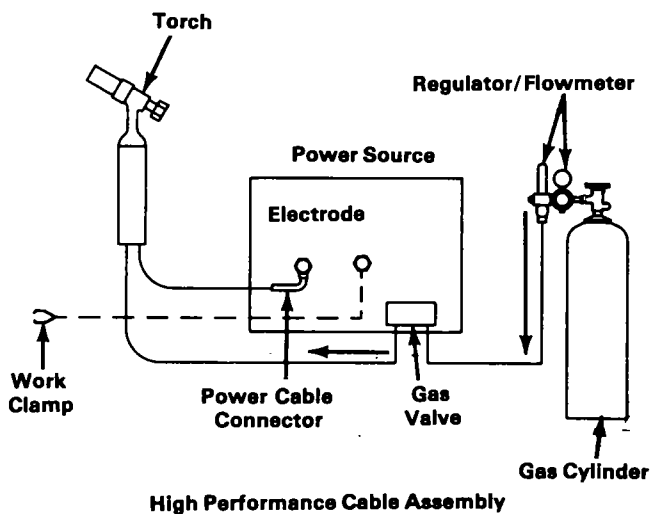
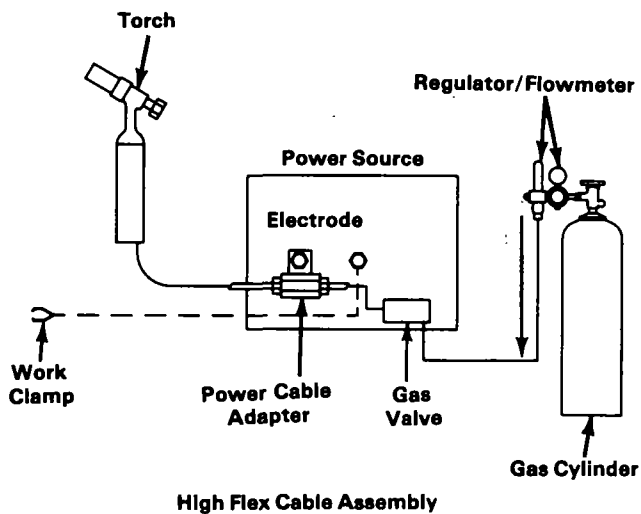
The high performance cable assembly has separate power cable and gas hose. The gas hose has a 5/8-18 male right-hand fitting (Figure 3-1).

To install gas hose, connect gas hose fitting to gas valve outlet or regulator/flowmeter. Connect gas hose (extra hose not supplied) from gas valve inlet to regulator/flowmeter (Figures 3-2 and 3-3).



TA-120 824

Figure 3 - 2. GTAW Torch Connection Diagram For Models With Gas Valve



TA-120 824

Figure 3 - 3. GTAW Torch Connection Diagram For Models Without Gas Valve

C. Torch Gas Valve Operation (If Applicable)

The gas valve allows gas flow control at the torch. A one-half turn counterclockwise opens the gas valve, and a one-half turn clockwise closes the valve.

The gas valve allows control of gas postflow time, or the length of time gas flows after the arc is extinguished. Insufficient gas postflow results in an oxidized (black) electrode surface. If an oxidized electrode were used, the black surface would contaminate the weld and cause poor arc direction.

IMPORTANT: *As a general rule, allow 10 seconds of gas postflow time per 100 amperes of weld current before closing valve.*

3 - 3. POWER CABLE CONNECTION (Figures 3-1, 3-2, and 3-3)

WARNING: ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Shut down welding power source and disconnect input power employing "lockout/tagging procedures" before installing torch.

SECTION 4 - SEQUENCE OF OPERATION

WARNING: ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Keep all covers and handle in place while operating.

ARC RAYS, SPARKS, AND HOT SURFACES can burn eyes and skin; **NOISE** can damage hearing.

- Wear correct eye, ear, and body protection.

FUMES AND GASES can seriously harm your health.

- Ventilate to keep from breathing fumes and gases.
- If ventilation is inadequate, use approved breathing apparatus.

HOT METAL, SPATTER, AND SLAG can cause fire and burns.

- Watch for fire.
- Have a fire extinguisher nearby, and know how to use.
- Allow work and equipment to cool before handling.

MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation.

- Wearers should consult with their doctor before going near arc welding, gouging, or spot welding operations.

See Section 1 - Safety Rules for additional safety information.

4 - 1. GAS TUNGSTEN ARC WELDING (GTAW)

1. Install and connect torch according to Section 3.
2. Make sure backup and all gas connections are securely tightened.
3. With regulator/flowmeter valve closed, open gas cylinder valve.

Lockout/tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device.

A. High Flex Cable Assembly

The high flex cable assembly contains the power cable within the gas hose. The high flex cable has a 3/8-24 male right-hand fitting (Figure 3-1).

To install high flex cable, connect high flex cable fitting to power cable adapter (see Section 3-2A). Connect power cable adapter to weld output terminal (Figures 3-2 and 3-3).

B. High Performance Cable Assembly

The high performance cable assembly has separate power cable and gas hose.

To install power cable, connect power cable connector to weld output terminal (Figures 3-2 and 3-3).

4. Set power source for desired welding amperage.
5. Wear dry insulating clothing and gloves and welding helmet with proper filter lens according to ANSI Z49.1.
6. Energize welding power source.
7. Set gas flow to desired level (requires open gas valve).

IMPORTANT: *Purge gas hose to clear hose of air, moisture, or any other contaminants. Allow gas to flow 2 to 3 minutes on new torch; 5 to 6 seconds thereafter.*

8. Begin welding.

4 - 2. SHUTTING DOWN

1. Stop welding.

IMPORTANT: *As a general rule, allow 10 seconds of gas postflow time per 100 amperes of weld current before closing valve.*

2. Turn off welding power source.
3. Turn off the shielding gas and coolant supplies at their sources.

WARNING: HIGH CONCENTRATION OF SHIELDING GAS can harm health or kill.

- Shut off gas supply when not in use.

5 - 1. INSPECTION AND UPKEEP - Usage and shop conditions will determine frequency and type of maintenance required. Perform inspections once a week.

WARNING: ELECTRIC SHOCK can kill; HOT SURFACES can cause severe burns.

- Do not touch live electrical parts.
- Shut down welding power source before working on torch.
- Disconnect torch from welding power source before inspecting, maintaining, or servicing.
- Allow a cooling period before servicing.

1. Inspect torch for broken areas, cracks and loose parts; tighten, repair and replace as required.
2. Remove grease and dirt from components, and moisture from electrical parts and cables.

5 - 2. TORCH BODY MAINTENANCE (Figure 3-1)

WARNING: ELECTRIC SHOCK can kill; HOT SURFACES can cause severe burns.

- Do not touch live electrical parts.
- Shut down welding power source before working on torch.
- Disconnect torch from welding power source before inspecting, maintaining, or servicing.
- Allow a cooling period before servicing.

Once a week inspect condition of torch body components.

Replace cup, heat shield, backcap, and O-rings if cracked. Maintain tight fit of torch components to ensure good weld quality.

5 - 3. INSPECTING HOSES, CONNECTIONS AND CABLES

WARNING: ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Shut down welding power source and disconnect input power employing "lockout/tagging procedures" before inspecting, maintaining, or servicing.

Lockout/tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device.

Once a week inspect hoses and connections.

A. Gas Hose

Gas leaks may result in poor weld quality. Inspect hoses for breaks. Keep connections clean and tight.

B. Power Cable

Inspect cables for breaks in insulation, and ensure that all connections are clean and tight. Repair or replace cables if insulation breaks are present. Clean and tighten connections at each inspection.

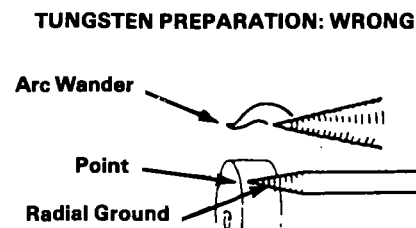
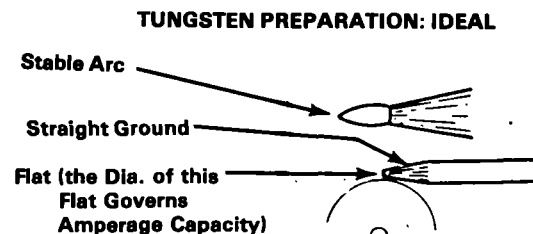
5 - 4. PREPARING TUNGSTEN ELECTRODES (Figure 5-1)

CAUTION: HOT FLYING METAL PARTICLES can injure personnel, start fires, and damage equipment; TUNGSTEN CONTAMINATION can lower weld quality.

- Shape tungsten electrode only with properly guarded grinder in a safe location wearing proper face, hand, and body protection.
- Do not use same wheel for any other job or the tungsten will become contaminated.

Tungsten electrode shaping should be done on a fine grit, hard abrasive wheel. Since tungsten is harder than most grinding wheels, causing the tungsten to be chipped away rather than cut away, the grinding marks should run lengthwise with the electrode.

For additional information, see your distributor or request a handbook from factory on the Gas Tungsten Arc Welding (GTAW) process.



TA-120 630

Figure 5 - 1. Tungsten Preparation

Table 5 - 1. Tungsten Size Chart

| Electrode Diameter | Amperage Range - Polarity - Gas Type | | |
|---|--|---|-------------------------------------|
| | DC-Argon Electrode Negative/ Straight Polarity | DC-Argon Electrode Positive/ Reverse Polarity | AC-Argon Using High Frequency |
| Pure Tungsten (Green Band) | | | |
| .020" | 5-20 | * | 5-20 |
| .040" | 15-80 | * | 10-60 |
| 1/16" | 70-150 | 10-20 | 50-100 |
| 3/32" | 125-225 | 15-30 | 100-160 |
| 1/8" | 225-360 | 25-40 | 150-210 |
| 2% Thorium Alloyed Tungsten (Red Band) | | | |
| .020" | 15-40 | * | 15-35 |
| .040" | 25-85 | * | 20-80 |
| 1/16" | 50-160 | 10-20 | 50-150 |
| 3/32" | 135-235 | 15-30 | 130-250 |
| 1/8" | 250-400 | 25-40 | 225-360 |
| Zirconium Alloyed Tungsten (Brown Band) | | | |
| .020" | * | * | 15-35 |
| .040" | * | * | 20-80 |
| 1/16" | * | * | 50-150 |
| 3/32" | * | * | 130-250 |
| 1/8" | * | * | 225-360 |

***NOT RECOMMENDED**

The figures are intended as a guide and are a composite of recommendations from American Welding Society (AWS) and electrode manufacturers.

| Item No. | Miller Stock No. | Miller Model No. | Description | Quantity | | | |
|-------------|---------------------|---------------------|-------------|-----------|-----------|-----------|-----------|
| | | | | Model | | | |
| | | | | HR VHR | NR VNR | HF VHF | NF VNF |

Figure A**Complete Torch Assembly**

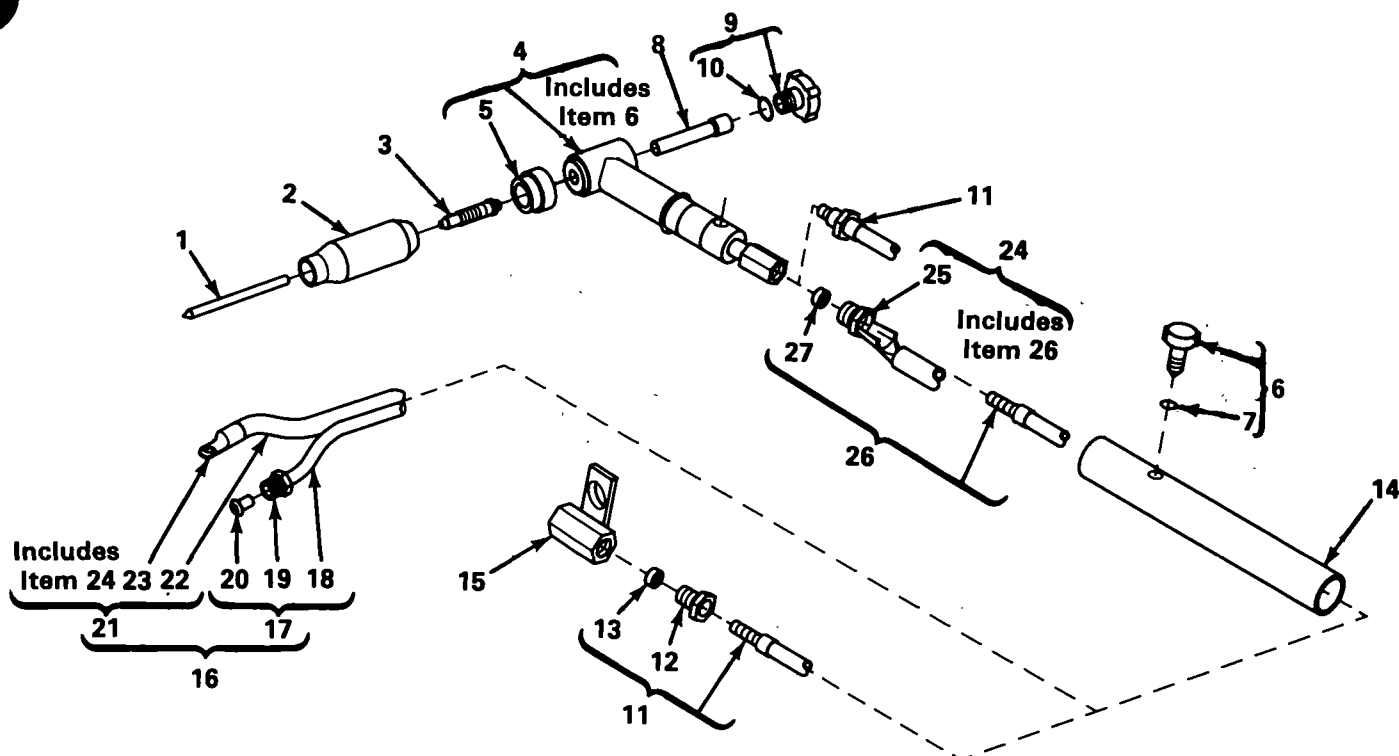
| | | | | | | | |
|---|----------|--------|---|---|---|---|---|
| 1 | | | TUNGSTEN, electrode (consult your welding supply distributor) | | | | |
| 2 | | | CUP (see Figure B) | | | | |
| 3 | | | COLLET BODY (see Figure B) | | | | |
| 4 | 116 252 | | TORCH BODY, rigid hd w/heat shield (consisting of) ... | 1 | 1 | | |
| 4 | 115 251 | | TORCH BODY, flex hd w/heat shield (consisting of) ... | | | 1 | 1 |
| 5 | 116 256 | 300HS | . HEAT SHIELD, std. | 1 | 1 | 1 | 1 |
| 5 | †119 914 | 3GHS | HEAT SHIELD, small dia gas lens. | 1 | 1 | 1 | 1 |
| 5 | †119 915 | 3GHSLD | HEAT SHIELD, large dia gas lens. | 1 | 1 | 1 | 1 |
| 4 | 116 250 | | TORCH BODY, rigid hd w/heat shield & valve (consisting of) | 1 | 1 | | |
| 4 | 116 253 | | TORCH BODY, flex hd w/heat shield & valve (consisting of) | | | 1 | 1 |
| 5 | 116 256 | 300HS | . HEATSHIELD, std. | 1 | 1 | 1 | 1 |
| 6 | 116 255 | 100VK | . VALVE, knob (consisting of) | 1 | 1 | 1 | 1 |
| 7 | 116 254 | 100R | . O-RING | 2 | 2 | 2 | 2 |
| 8 | | | COLLET (see Figure B) | | | | |
| 9 | 116 259 | 300S | BACKCAP, short (consisting of) | 1 | 1 | 1 | 1 |
| 9 | †116 258 | 300M | BACKCAP, medium (consisting of) | 1 | 1 | 1 | 1 |
| 9 | †116 257 | 300L | BACKCAP, long (consisting of) | 1 | 1 | 1 | 1 |

| Item No. | Miller Stock No. | Miller Model No. | Description | Quantity | | | |
|-------------|---------------------|---------------------|-------------|-----------|-----------|-----------|-----------|
| | | | | Model | | | |
| | | | | HR VHR | NR VNR | HF VHF | NF VNF |

Figure A

Complete Torch Assembly (Cont'd.)

| | | | | | | | |
|----|----------|----------|--|---|---|---|---|
| 10 | 116 260 | 300R | . O-RING | 1 | 1 | 1 | 1 |
| 11 | 115 271 | 1512PCHF | HI-FLEX POWER CABLE, 12-1/2 ft (consisting of) | 1 | | 1 | |
| 11 | 116 272 | 1525PCHF | HI-FLEX POWER CABLE, 25 ft (consisting of) | 1 | | 1 | |
| 12 | 120 721 | | . RH NUT | 2 | | 2 | |
| 13 | 120 720 | | . RING NUT | 2 | | 2 | |
| 14 | 117 585 | | HANDLE | 1 | 1 | 1 | 1 |
| 14 | 118 514 | | HANDLE, medium w/hole for valve | 1 | 1 | 1 | 1 |
| 15 | †115 276 | 15PCA | POWER CABLE ADAPTER | 1 | | 1 | |
| 16 | 116 261 | 1512PCN | HI-PERFORMANCE POWER CABLE & HOSE, 12-1/2 ft (consisting of) | | 1 | | 1 |
| 16 | 116 262 | 1525PCN | HI-PERFORMANCE POWER CABLE & HOSE, 25 ft (consisting of) | | 1 | | 1 |
| 17 | 116 267 | 212AH | . GAS HOSE, 12-1/2 ft (consisting of) | | 1 | | 1 |
| 17 | 116 268 | 225AH | . GAS HOSE, 25 ft (consisting of) | | 1 | | 1 |
| 18 | 116 512 | | . . HOSE, black 1/8 ID (order by ft as req'd.) | | | | |
| 19 | 116 266 | 2AN | . . GAS NUT | | 1 | | 1 |
| 20 | 116 269 | 3HF | . . HOSE FITTING | | 1 | | 1 |
| 21 | 116 264 | 1512CN | . POWER CABLE, 12-1/2 ft (consisting of) | | 1 | | 1 |
| 21 | 116 265 | 1525CN | . POWER CABLE, 25 ft (consisting of) | | 1 | | 1 |
| 22 | 600 317 | | . . CABLE, weld-copper No. 4 (order by ft as req'd.) | | | | |
| 23 | 116 270 | 5PF | . . POWER CABLE FITTING | | 1 | | 1 |
| 24 | 116 263 | 15PFN | . . POWER CABLE FITTING (consisting of) | | 1 | | 1 |
| 25 | 120 729 | | . . CRIMP, cable | | 1 | | 1 |
| 26 | 120 761 | | . . FITTING, gas (consisting of) | | 1 | | 1 |
| 27 | 120 720 | | . . . RING NUT | | 1 | | 1 |



TA-120 673

Figure A - Complete Torch Assembly

†Optional Equipment

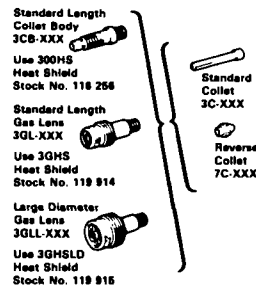
BE SURE TO PROVIDE MODEL AND STYLE NUMBER WHEN ORDERING REPLACEMENT PARTS.

CONSUMABLE PARTS SELECTOR

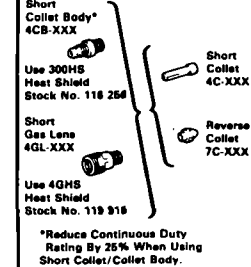
(Note: Collet, Collet Body And Gas Cup Required To Complete Torch.) Torches With High Flex Composite Cable Also Require A Power Cable Adapter.

| Tungsten Diameter | in. (mm) | .020" (0.5) | .040" (1.0) | 1/16" (1.6) | 3/32" (2.4) | 1/8" (3.2) |
|-------------------------------------|------------------------|-------------------|------------------|-------------------|--------------------|--------------------|
| Amperage Range | ACHF DCSP | 5-20 5-20 | 10-80 15-80 | 50-150 70-150 | 100-235 150-250 | 150-325 220-350 |
| Collet (Standard) | Model No. Stock No. | 3C20 116 367 | 3C40 116 368 | 3C116 116 369 | 3C332 116 370 | 3C418 116 371 |
| Collet (Reverse) | Model No. Stock No. | 7C20 116 379 | 7C40 116 380 | 7C116 116 381 | 7C332 116 382 | 7C418 116 383 |
| Collet Body (Std. Lgth.) | Model No. Stock No. | 3CB20 116 361 | 3CB40 116 362 | 3CB116 116 363 | 3CB332 116 364 | 3CB418 116 365 |
| Cup, Ceramic 1-27/32" Long | | | | | | |
| | Stock/Model No. | 116 347 (3C3) | | | | 3/16" |
| | | 116 348 (3C4) | | | | 1/4" |
| | | 116 349 (3C5) | | | | 5/16" |
| | | 116 350 (3C6) | | | | 3/8" |
| | | 116 351 (3C7) | | | | 7/16" |
| | | 116 352 (3C8) | | | | 1/2" |
| | | 116 353 (3C10) | | | | 5/8" |
| | | 116 354 (3C12) | | | | 3/4" |
| Cup, Ceramic 3-7/32" Long | | | | | | |
| | | 116 343 (3C4L) | | | | 1/4" |
| | | 116 344 (3C5L) | | | | 5/16" |
| | | 116 345 (3C6L) | | | | 3/8" |
| | | 116 346 (3C7L) | | | | 7/16" |
| Cup, Alumina 1-27/32" Long | | | | | | |
| | | 116 330 (3A4) | | | | 1/4" |
| | | 116 331 (3A5) | | | | 5/16" |
| | | 116 332 (3A6) | | | | 3/8" |
| | | 116 333 (3A7) | | | | 7/16" |
| | | 116 334 (3A8) | | | | 1/2" |
| | | 116 335 (3A10) | | | | 5/8" |
| | | 116 336 (3A12) | | | | 3/4" |
| Gas Lens Collet Body Std. Lgth. | | | | | | |
| | Model No. Stock No. | 3GL20 119 926 | 3GL40 119 927 | 3GL116 119 928 | 3GL332 119 929 | 3GL418 119 930 |
| Cup, Ceramic - Gas Lens 1-5/8" Long | | | | | | |
| | Stock/Model No. | 119 917 (3CG4) | | | | 1/4" |
| | | 119 918 (3CG5) | | | | 5/16" |
| | | 119 919 (3CG6) | | | | 3/8" |
| | | 119 920 (3CG7) | | | | 7/16" |
| | | 119 921 (3CG8) | | | | 1/2" |
| | | 119 922 (3CG11) | | | | 11/16" |
| | | 119 923 (3CG12) | | | | 3/4" |
| | | 119 924 (3CG14) | | | | 7/8" |
| | | 119 925 (3CG16) | | | | 1" |
| Cup, Alumina - Gas Lens 1-5/8" Long | | | | | | |
| | | 119 932 (3AG4) | | | | 1/4" |
| | | 119 933 (3AG5) | | | | 5/16" |
| | | 119 934 (3AG6) | | | | 3/8" |
| | | 119 935 (3AG7) | | | | 7/16" |
| | | 119 936 (3AG8) | | | | 1/2" |
| | | 119 937 (3AG11) | | | | 11/16" |
| Gas Lens Collet Body Lg. Dia. | | | | | | |
| | Model No. Stock No. | | | 3GL332 119 902 | 3GL418 119 903 | |
| Cup, Alumina 1-7/8" Long | | | | | | |
| | Stock/Model No. | 119 911 (3AG8LD) | | | | 1/2" |
| | | 119 912 (3AG10LD) | | | | 5/8" |
| | | 119 913 (3AG12LD) | | | | 3/4" |

STANDARD LENGTH FRONT ENDS



SHORT FRONT ENDS



| Tungsten Diameter | in. (mm) | .020" (0.5) | .040" (1.0) | 1/16" (1.6) | 3/32" (2.4) | 1/8" (3.2) |
|---------------------|------------------------|------------------|------------------|-------------------|--------------------|--------------------|
| Amperage Range | ACHF DCSP | 5-20 5-20 | 10-80 15-80 | 50-150 70-150 | 100-235 150-250 | 150-325 220-350 |
| Collet (Short) | Model No. Stock No. | 4C20 116 373 | 4C40 116 374 | 4C116 116 375 | 4C332 116 376 | 4C418 116 377 |
| Collet (Reverse) | Model No. Stock No. | 7C20 116 379 | 7C40 116 380 | 7C116 116 381 | 7C332 116 382 | 7C418 116 383 |
| Collet Body (Short) | Model No. Stock No. | 4CB20 116 355 | 4CB40 116 356 | 4CB116 116 357 | 4CB332 116 358 | 4CB418 116 359 |

| | | | | | | | |
|------------------------------|------------------------|------------------|------------------|-------------------|-------------------|-------------------|-------|
| Cup, Ceramic 1-5/32" Long | Stock/Model No. | 116 337 (2C4) | | | | | 1/4" |
| | | 116 338 (2C5) | | | | | 5/16" |
| | | 116 339 (2C6) | | | | | 3/8" |
| | | 116 340 (2C7) | | | | | 7/16" |
| | | *116 341 (2C8) | | | | | 1/2" |
| | | *116 342 (2C10) | | | | | 5/8" |
| Cup, Ceramic - Long 1-7/8" | Stock/Model No. | 116 326 (2C3L) | | | | | 3/16" |
| | | 116 327 (2C4L) | | | | | 1/4" |
| | | 116 328 (2C5L) | | | | | 5/16" |
| | | 116 329 (2C6L) | | | | | 3/8" |
| Cup, Alumina 1-5/32" Long | Stock/Model No. | 116 310 (2A4) | | | | | 1/4" |
| | | 116 311 (2A5) | | | | | 5/16" |
| | | 116 312 (2A6) | | | | | 3/8" |
| | | 116 313 (2A7) | | | | | 7/16" |
| | | 116 314 (2A8) | | | | | 1/2" |
| Gas Lens Collet Body - Short | Model No. Stock No. | 4GL20 119 905 | 4GL40 119 906 | 4GL116 119 907 | 4GL332 119 908 | 4GL418 119 909 | |
| | Stock/Model No. | 119 893 (2AG4) | | | | | 1/4" |
| Cup, Alumina 1" Long | | 119 894 (2AG5) | | | | | 5/16" |
| | | 119 895 (2AG6) | | | | | 3/8" |
| | | 119 896 (2AG7) | | | | | 7/16" |
| | | | | | | | |

SHADED AREAS INDICATE
RECOMMENDED USAGE

Figure B - Consumable Parts And Cross Reference Chart

**CROSS REFERENCE TO
COMPETITIVE MODEL**

| MILLER STOCK NO. | MILLER MODEL NO. | COMPETITIVE NO. |
|---------------------|---------------------|--------------------|
| 116 367 | 3C20 | 10N21 |
| 116 368 | 3C40 | 10N22 |
| 116 369 | 3C116 | 10N23 |
| 116 370 | 3C332 | 10N24 |
| 116 371 | 3C418 | 10N25 |
| 116 379 | 7C20 | N/A |
| 116 380 | 7C40 | N/A |
| 116 381 | 7C116 | N/A |
| 116 382 | 7C332 | N/A |
| 116 383 | 7C418 | N/A |
| 116 361 | 3CB20 | 10N29 |
| 116 362 | 3CB40 | 10N30 |
| 116 363 | 3CB116 | 10N31 |
| 116 364 | 3CB332 | 10N32 |
| 116 365 | 3CB418 | 10N28 |
| 116 347 | 3C3 | N/A |
| 116 348 | 3C4 | 105Z43 |
| 116 349 | 3C5 | 105Z42 |
| 116 350 | 3C6 | 105Z44 |
| 116 351 | 3C7 | 105Z45 |
| 116 352 | 3C8 | 08N78 |
| 116 353 | 3C10 | 08N79 |
| 116 354 | 3C12 | 08N80 |
| 116 343 | 3C4L | 12N03 |
| 116 344 | 3C5L | 105Z60 |
| 116 345 | 3C6L | 12N02 |
| 116 346 | 3C7L | 105Z61 |
| 116 330 | 3A4 | 10N50 |
| 116 331 | 3A5 | 10N49 |
| 116 332 | 3A6 | 10N48 |
| 116 333 | 3A7 | 10N47 |
| 116 334 | 3A8 | 10N46 |
| 116 335 | 3A10 | 10N45 |
| 116 336 | 3A12 | 10N44 |
| 119 926 | 3GL20 | 45V29 |
| 119 927 | 3GL40 | 45V24 |
| 119 928 | 3GL116 | 45V25 |
| 119 929 | 3GL332 | 45V26 |
| 119 930 | 3GL418 | 45V27 |
| 119 917 | 3CG4 | 54N35 |
| 119 918 | 3CG5 | 54N34 |
| 119 919 | 3CG6 | 54N33 |
| 119 920 | 3CG7 | 54N32 |
| 119 921 | 3CG8 | 54N31 |
| 119 922 | 3CG11 | 54N36 |
| 119 923 | 3CG12 | N/A |
| 119 924 | 3CG14 | N/A |
| 119 925 | 3CG16 | N/A |
| 119 932 | 3AG4 | 54N18 |
| 119 933 | 3AG5 | 54N17 |

| MILLER STOCK NO. | MILLER MODEL NO. | COMPETITIVE NO. |
|---------------------|---------------------|--------------------|
| 119 934 | 3AG6 | 54N16 |
| 119 935 | 3AG7 | 54N15 |
| 119 936 | 3AG8 | 54N14 |
| 119 937 | 3AG11 | 54N19 |
| 119 902 | 3GLL332 | 45V64 |
| 119 903 | 3GLL418 | 995795 |
| 119 911 | 3AG8LD | 57N74 |
| 119 912 | 3AG10LD | 53N88 |
| 119 913 | 3AG12LD | 53N87 |
| 116 373 | 4C20 | N/A |
| 116 374 | 4C40 | 10N22S |
| 116 375 | 4C116 | 10N23S |
| 116 376 | 4C332 | 10N24S |
| 116 377 | 4C418 | 10N25S |
| 116 379 | 7C20 | N/A |
| 116 380 | 7C40 | N/A |
| 116 381 | 7C116 | N/A |
| 116 382 | 7C332 | N/A |
| 116 383 | 7C418 | N/A |
| 116 355 | 4CB20 | N/A |
| 116 356 | 4CB40 | 17CB20 |
| 116 357 | 4CB116 | 17CB20 |
| 116 358 | 4CB332 | 17CB20 |
| 116 359 | 4CB418 | 17CB20 |
| 116 337 | 2C4 | 13N14 |
| 116 338 | 2C5 | 13N15 |
| 116 339 | 2C6 | 13N16 |
| 116 340 | 2C7 | 13N17 |
| 116 341 | 2C8 | 13N18 |
| 116 342 | 2C10 | 13N19 |
| 116 326 | 2C3L | 796F70 |
| 116 327 | 2C4L | 796F71 |
| 116 328 | 2C5L | 796F72 |
| 116 329 | 2C6L | 796F73 |
| 116 310 | 2A4 | 13N08 |
| 116 311 | 2A5 | 13N09 |
| 116 312 | 2A6 | 13N10 |
| 116 313 | 2A7 | 13N11 |
| 116 314 | 2A8 | 13N12 |
| 116 315 | 2A10 | 13N13 |
| 119 905 | 4GL20 | N/A |
| 119 906 | 4GL40 | N/A |
| 119 907 | 4GL116 | N/A |
| 119 908 | 4GL332 | N/A |
| 119 909 | 4GL418 | N/A |
| 119 893 | 2AG4 | 53N58 |
| 119 894 | 2AG5 | 53N59 |
| 119 895 | 2AG6 | 53N60 |
| 119 896 | 2AG7 | 53N61 |







May 3, 1989

FORM: OM-1559

ERRATA SHEET

After this manual was printed, refinements in equipment design occurred. This sheet lists exceptions to data appearing later in this manual.

AMENDMENT TO PARTS LIST

Amend Parts List as follows:

| ** | Part No. | Replaced With | Description | Quantity |
|------|-------------|------------------|---------------------------|----------|
| 9-11 | 115 271 | 116 271 | HI-FLEX POWER CABLE | 1 |
| 9-14 | 117 585 | 117 586 | HANDLE | 1 |

**First digit represents page no - digits following dash represent item no.

BE SURE TO PROVIDE MODEL AND STYLE NUMBER WHEN ORDERING REPLACEMENT PARTS.

